

EXPRESS MAIL LABEL NO. EV343426010US

WHAT IS CLAIMED IS:

1. A method of decoding a turbo-code encoded signal in a receiver, said method comprising the steps of:
 - receiving the signal from a transmission channel;
 - digitally turbo-code decoding the signal;
 - dynamically determining a quality information representative of conditions of the channel state estimation; and
 - dynamically comparing the quality information with a predetermined criteria for defining good or bad estimation conditions,
 - wherein the step of digitally turbo-code decoding includes dynamically selecting a Maximum-A-Posteriori algorithm in the logarithmic domain for good estimation conditions, or an approximation of the Maximum-A-Posteriori algorithm in the logarithmic domain for bad estimation conditions.
2. The method according to claim 1,
 - wherein the determining step includes determining an error information representing an error of the Signal to Interference Ratio (SIR) estimation, the error information being the quality information, and
 - the predetermined criteria includes at least one predetermined threshold.
3. The method according to claim 2,
 - wherein the error information is an absolute value of the error of the SIR estimation,
 - the Maximum-A-Posteriori algorithm in the logarithmic domain is the LogMAP algorithm and the approximation of the Maximum-A-Posteriori algorithm in the logarithmic domain is the MaxLogMAP algorithm, and
 - the LogMAP algorithm is selected if the absolute value of the error is smaller than the threshold and the MaxLogMAP algorithm is selected if the absolute value of the error is greater than or equal to the threshold.

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4. The method according to claim 3, wherein the threshold is smaller than or equal to about 0.5 dB.
5. The method according to claim 3, wherein the threshold is equal to about 0.2 dB.
6. The method according to claim 2, wherein the receiver is mobile and the determining step includes estimating a mobile receiver speed, the speed being the error information.
7. The method according to claim 6, wherein the receiver is a cellular mobile phone.
8. The method according to claim 6, wherein the predetermined criteria comprises a delay profile of the transmission channel.

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9. The method according to claim 6,
wherein the Maximum-A-Posteriori algorithm in the logarithmic domain is the LogMAP algorithm and the approximation of the Maximum-A-Posteriori algorithm in the logarithmic domain is the MaxLogMAP algorithm,
the predetermined criteria comprises a first predetermined threshold, a second predetermined threshold, which is greater than the first threshold, and a third threshold that depends on a delay profile of the transmission channel,
if the estimated speed is lower than the first threshold, the LogMAP algorithm is selected,
if the estimated speed is greater than the second threshold, the MaxLogMAP algorithm is selected, and
if the estimated speed is between the first and second thresholds, the estimated speed is compared with the third threshold, and if the estimated speed is lower than the third threshold the LogMAP algorithm is selected, whereas if the estimated speed is greater than the third threshold the MaxLogMAP algorithm is selected.
10. The method according to claim 2, wherein the receiver cooperates with a mobile terminal and the determining step includes estimating a mobile terminal speed, the speed being the error information.
11. The method according to claim 10, wherein the receiver is a base station.
12. The method according to claim 10, wherein the predetermined criteria comprises a delay profile of the transmission channel.
13. The method according to claim 1, wherein the Maximum-A-Posteriori algorithm in the logarithmic domain is the LogMAP algorithm and the approximation of the Maximum-A-Posteriori algorithm in the logarithmic domain is the MaxLogMAP algorithm.

14. A receiver comprising:

reception means for receiving a turbo-code encoded signal from a transmission channel;

digital processing means coupled to the reception means, the digital processing means including demodulation means and turbo-code decoding means,

wherein the turbo-code decoding means is controllably configurable, in response to a control signal, between a first configuration that implements a Maximum-A-Posteriori algorithm in the logarithmic domain and a second configuration that implements an approximation of the Maximum-A-Posteriori algorithm in the logarithmic domain, and

the digital processing means further includes:

auxiliary processing means for determining a quality information representative of conditions of the channel state estimation; and

control means for comparing the quality information with a predetermined criteria and delivering the control signal with a first value corresponding to good estimation conditions or with a second value corresponding to bad estimation conditions, the turbo-code decoding means being configured in the first configuration when the control signal has the first value, and in the second configuration when the control signal has the second value.

15. The receiver according to claim 14,

wherein the auxiliary processing means includes means for determining an error information representing an error of the Signal to Interference Ratio (SIR) estimation, the error information being the quality information, and

the predetermined criteria includes at least one predetermined threshold.

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16. The receiver according to claim 15,
wherein the error information is the absolute value of the error of the SIR estimation, and
the control signal has the first value if the absolute value of the error is smaller than the threshold, and the second value if the absolute value of the error is greater than or equal to the threshold.
17. The receiver according to claim 16, wherein the threshold is smaller than or equal to about 0.5 dB.
18. The receiver according to claim 16, wherein the threshold is equal to about 0.2 dB.
19. The receiver according to claim 15,
wherein the receiver is mobile, and
the auxiliary processing means includes speed estimation means for determining the speed of the mobile receiver, the speed being the error information.
20. The receiver according to claim 19, wherein the receiver is a cellular mobile phone.
21. The receiver according to claim 19, wherein the predetermined criteria comprises a delay profile of the transmission channel.

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22. The receiver according to claim 19,
wherein the predetermined criteria comprises a first predetermined threshold, a second predetermined threshold, which is greater than the first threshold, and a third threshold that depends on a delay profile of the transmission channel,
if the estimated speed is lower than the first threshold, the control signal has the first value,
if the estimated speed is greater than the second threshold, the control signal has the second value, and
if the estimated speed is between the first and second thresholds, the estimated speed is compared with the third threshold, and if the estimated speed is lower than the third threshold the control signal has the first value, whereas if the estimated speed is greater than the third threshold the control signal has the second value.
23. The receiver according to claim 15,
wherein the receiver cooperates with a mobile terminal, and
the auxiliary processing means includes speed estimation means for determining the speed of the mobile terminal, the speed being the error information.
24. The receiver according to claim 23, wherein the receiver is a base station.
25. The receiver according to claim 14, wherein the Maximum-A-Posteriori algorithm in the logarithmic domain is the LogMAP algorithm and the approximation of the Maximum-A-Posteriori algorithm in the logarithmic domain is the MaxLogMAP algorithm.

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26. A machine-readable medium encoded with a program for decoding a turbo-code encoded signal in a receiver, said program containing instructions for performing the steps of:

- receiving the signal from a transmission channel;
- digitally turbo-code decoding the signal;
- dynamically determining a quality information representative of conditions of the channel state estimation; and
- dynamically comparing the quality information with a predetermined criteria for defining good or bad estimation conditions,

wherein the step of digitally turbo-code decoding includes dynamically selecting a Maximum-A-Posteriori algorithm in the logarithmic domain for good estimation conditions, or an approximation of the Maximum-A-Posteriori algorithm in the logarithmic domain for bad estimation conditions.

27. The machine-readable medium according to claim 26,

- wherein the determining step includes determining an error information representing an error of the Signal to Interference Ratio (SIR) estimation, the error information being the quality information, and
- the predetermined criteria includes at least one predetermined threshold.

28. The machine-readable medium according to claim 26, wherein the Maximum-A-Posteriori algorithm in the logarithmic domain is the LogMAP algorithm and the approximation of the Maximum-A-Posteriori algorithm in the logarithmic domain is the MaxLogMAP algorithm.